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Kathy Manke Avago Technologies Limited 4380 Ziegler Road Fort Collins, CO 80525			EXAMINER BELLO, AGUSTIN	
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* LISA A. BUCKMAN, FRANK H. PETERS,  
and BRIAN E. LEMOFF

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Appeal 2009-014535  
Application 10/080,944  
Technology Center 2600

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Before KENNETH W. HAIRSTON, JOSEPH F. RUGGIERO, and  
ROBERT E. NAPPI, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

## STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Final Rejection of claims 1-9 and 14-20, which are all of the pending claims. Claims 10-13 and 21 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Appeal Brief (filed December 12, 2007), the Answer (mailed February 7, 2008), and the Reply Brief (filed April 2, 2008) for the respective details. Only those arguments actually made by Appellants have been considered in this decision. Arguments which Appellants could have made but chose not to make in the Briefs have not been considered and are deemed to be waived (*see* 37 C.F.R. § 41.37(c)(1)(vii) (2008)).

### *Appellants' Invention*

Appellants' invention relates to an optical interconnect and data link which utilizes an array of vertical cavity surface emitting laser (VCSEL) arrays to simultaneously transmit several optical signals through collimating optics that generate plural multiple-wavelength optical signals. (*See generally* Spec. 6:13-23).

Claim 1 is illustrative of the invention and reads as follows:

1. A two-dimensional free space optical link comprising:  
an array of tightly-coupled, multi-wavelength arrays of vertical cavity surface emitting lasers (VCSELs), operating at predetermined wavelengths;  
collimating optics for collimating the optical signals emitted from each said multi-wavelength array of VCSELs into a single uniform optical signal; and

an array of tightly-coupled optical receiver arrays, each said receiver array being configured to receive the signals from one of said VCSEL arrays, wherein the wavelengths of the received signals generally match the wavelengths of the signals transmitted by said VCSEL arrays such that multiple optical wavelengths can be simultaneously communicated at high-speed from one of said VCSEL arrays to one of said receiver arrays across a very short haul channel.

### *The Examiner's Rejections*

The Examiner relies on the following prior art references to show unpatentability:

Robertson	US 5,857,042	Jan. 5, 1999
Baney	US 6,486,984 B1	Nov. 26, 2002 (filed Jun. 7, 1999)
Ciemiewicz	US 6,695,493 B2	Feb. 24, 2004 (filed Oct. 9, 2001)

Claims 1-4, 8, 9, and 14-16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Robertson.

Claims 5-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson in view of Baney.

Claims 17-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson in view of Baney and Ciemiewicz.

### ANALYSIS

#### *35 U.S.C. § 102(b) Rejection*

Appellants' arguments contend that, in contrast to the requirements of independent claims 1 and 14, Robertson has no disclosure of "collimating optics for collimating the optical signals emitted from each said multi-wavelength array of VCSELs into a single uniform optical signal."

According to Appellants (App. Br. 7-9; Reply Br. 2), Robertson discloses a

plurality of emitters 16A-16D which are associated with individual collimating optics, e.g., emitter 16A is associated with lens 18A having an optical axis 20A and emitter 16B is associated with lens 18B having an optical axis 20B. (Robertson, Figs. 3, 11; col. 4, ll. 6-54). Appellants conclude, therefore, that Robertson merely discloses that each emitter transmits through an optical path associated with its respective collimating optics, and there is no collimation of the emitted optical signals into a *single uniform optical signal* as claimed.

We agree with Appellants. It is noteworthy that the Examiner agrees (Ans. 7) with Appellants' characterization of the disclosure of Robertson, i.e., individual collimating optics from each emitter form an individual light path for each emitter. In addressing the "collimating" feature of independent claims 1 and 14, however, the Examiner proffers a claim interpretation that requires only that optical signals be "formed" into a single signal after they have been collimated. According to the Examiner (Ans. 8), the collimating requirement is separate and distinct from the requirement of forming a single optical signal.

Initially, we simply find no basis for the Examiner to interpret the claim language in this manner. As argued by Appellants (Reply Br. 2), the plain language of claims 1 and 14 requires that the single uniform optical signal be *collimated* by the collimating optics.

Further, even assuming, *arguendo*, that the language of claims 1 and 14 could somehow be interpreted as requiring only that a single optical signal be "formed" and not "collimated," we find that Robertson falls short of satisfying this interpretation. In expanding upon the stated position, the Examiner (Ans. 8-9) suggests that if the individual collimated signals output

from the multi-wavelength array of VCSELs 16 in Robertson were allowed to overlap, even inadvertently, the result would be a single optical signal since the overlapping portions could no longer be differentiated.

We agree with Appellants, however, that there is simply no disclosure in Robertson that would support such an interpretation. To the contrary, as argued by Appellants (Reply Br. 2-3), Robertson discloses that any collimated signal that might overlap and impinge upon another collimated signal is refocused and diverted away by lenslets 19A-19D and, therefore, there would be no formation of a single optical signal as claimed. (Robertson, Fig. 4; col. 4, l. 55–col. 5, l. 7).

Lastly, we find unpersuasive the Examiner's suggestion (Ans. 9) that the language of claims 1 and 14 leaves open the possibility that only a single emitter in the VCSEL array may be emitting at a particular time and, therefore, the collimated output of this emitter would be a single optical signal. We agree with Appellants (Reply Br. 3) that the language of claims 1 and 14 requires that the arrays of VCSELs are operating or transmitting at predetermined *wavelengths*, i.e., plural wavelengths, and not a singular wavelength as suggested by the Examiner.

In view of the above discussion, since all of the claim limitations are not present in the disclosure of Robertson, we do not sustain the Examiner's 35 U.S.C. § 102(b) rejection of independent claims 1 and 14, nor of claims 2-4, 8, 9, 15, and 16 dependent thereon.

### *35 U.S.C. § 103(a) Rejections*

We also do not sustain the Examiner's obviousness rejection of claims 5-7 based on the combination of Robertson and Baney, nor the obviousness

rejection of claims 17-20 in which Ciemiewcz is added to the Robertson/Baney combination. The Examiner has applied the Baney reference to Robertson to address the partitioned optical filter and multiple segment optical filter features of claims 5-7. The Examiner has additionally applied the Ciemiewcz reference to address the different emissive wavelength setting feature of claims 17-20. We find nothing in the disclosures of Baney and Ciemiewcz, however, which overcomes the innate deficiency of Robertson in disclosing the collimating of signals from a multi-wavelength array of VCSELs into a single uniform optical signal as discussed *supra*.

### CONCLUSION

Based on the analysis above, we conclude that the Examiner erred in rejecting claims 1-4, 8, 9, and 14-16 for anticipation under 35 U.S.C. § 102(b), and in rejecting claims 5-7 and 17-20 for obviousness under 35 U.S.C. § 103(a).

### DECISION

The Examiner's decision rejecting claims 1-4, 8, 9, and 14-16 under 35 U.S.C. § 102(b) and claims 5-7 and 17-20 under 35 U.S.C. § 103(a) is reversed.

REVERSED

Appeal 2009-014535  
Application 10/080,944

babc

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